

Surgical Site Infection (SSI)

- **Data source:** CDC's National Healthcare Safety Network (NHSN), Procedure-Associated Module
- **Definition:** <http://www.cdc.gov/nhsn/PDFs/pscManual/9pscSSICurrent.pdf>
- **5-Year (2013) National Prevention Target:** 25% reduction in admission and readmission SSI [i.e., national Standardized Infection Ratio (SIR) for SSI = 0.75] for Surgical Care Improvement Project (SCIP) procedures [see Table 2], for primary deep or organ/space infections that are detected during admission or re-admission.
- **Metric:** Standardized Infection Ratio (SIR)
 - The SIR compares the observed number of healthcare-associated infections (HAIs) in the U.S. during a reporting period with the baseline U.S. experience
 - Risk adjustment models for SSI vary by procedure using different parameters and were validated using bootstrap methodology (Improving Risk-Adjusted Measures of Surgical Site Infection for the National Healthcare Safety Network, Yi Mu, Jonathan R. Edwards, Teresa C. Horan, Sandra I. Berrios-Torres and Scott K. Fridkin. *Infection Control and Hospital Epidemiology*, p.000 URL: <http://www.jstor.org/stable/10.1086/662016>)
 - SIR less than 1.0 means fewer HAIs observed during the reporting period than predicted from baseline data; SIR greater than 1.0 means more HAIs observed than predicted
- **Metric Definitions:**
Infections of the primary operative site following one of the ten SCIP procedures are eligible for inclusion in the metric. SSIs included in the metric are deep incisional and organ/space infections based on specific criteria (including clinical symptoms, laboratory reports, diagnostic imaging results, and surgeon diagnosis). Infections must occur within 30 days of the procedure if no implant is left in place or within 1 year of the procedure if an implant was left in place during the procedure.

Table 1. Summary measures of SSI reporting and prevention for baseline (2006-2008), 2010, and 2011 (preliminary):

Measure	Baseline (2006-2008)	2010 [‡]		2011 (prelim [◊])
		As of 10/2011	As of 10/2012	
Number of facilities reporting on at least one of the procedures	801	1,386	1,385	2,130
Number of procedures reported	613,263	528,012	529,038	748,192
Number of states with at least one facility reporting	43	46	45	49
Number of states with mandates*	7	15	13	18
Number of states who have validated data from this calendar year [†]		4	4	2
National SIR	N/A	0.90 = 4,672/5,173	0.92 = 4,737/5,170	0.83 = 6,357/7,701
National percent reduction	N/A	10 %	8%	17%

[‡] SSI data was generated in September 2012. Estimates for 2010 differ slightly from previous updates due to additional facility reporting and adjustments made as a result of validation studies or other evaluations.

[◊] Reporting of deep incisional and organ/space SSIs attributable to 2011 continues through the end of calendar year 2012 per NHSN protocol requirements. Measure will be final in early 2013.

*Legislative mandates to report SSI data from at least one of the procedures to NHSN for inpatient acute care facilities during any month of the listed calendar year

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† As of 2012, SSI data from 2010 or 2011 have been or are being validated using chart review in at least 4 states, including NY, SC, OR, and MA.

Table 2. List of SCIP Procedures Mapped to NHSN Procedures, No. of SSIs reported and included for baseline (2006-2008), 2010, and 2011 (preliminary)

SCIP Procedure	NHSN Procedure	Validated Parameters for Risk Model	Baseline (2006-2008)	2010 [†]	2011(prelim [◊])
Vascular	Abdominal aortic aneurysm repair	duration of procedure, wound class	30	5	12
	Peripheral vascular bypass surgery	age, ASA, duration of procedure, medical school affiliation	176	63	78
Coronary artery bypass graft	Coronary artery bypass graft with both chest and donor site incisions; Coronary artery bypass graft with chest incision only	age, ASA, duration of procedure, gender, medical school affiliation, age gender (interaction)	1,644	868	837
Other cardiac	Cardiac surgery	age, duration of procedure, emergency	229	119	154
Colon surgery	Colon surgery	age, ASA, duration, endoscope, medical school affiliation, hospital bed size, wound class	1,825	971	1,679
	Rectal surgery	duration of procedure, gender, hospital bed size	38	28	77
Hip arthroplasty	Hip arthroplasty	total/partial/revision, age, anesthesia, ASA, duration of procedure, medical school affiliation, hospital bed size, trauma	1,183	1,091	1,456
Abdominal hysterectomy	Abdominal hysterectomy	age, ASA, duration of procedure, hospital bed size	389	407	531
Knee arthroplasty	Knee arthroplasty	age, ASA, duration of procedure, gender, medical school affiliation, hospital bed size, trauma, revision	1,108	1,090	1,426
Vaginal hysterectomy	Vaginal hysterectomy	age, duration of procedure, medical school affiliation	122	95	107

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